SERVICE MANUAL
Level 1&2

NOKIA N81

RM-179 RM-223 RM-256

Transceiver characteristics:

Band:

EGSM: Quad-band 850/900/1800/1900MHz

RM-179, RM-223: WCDMA: 2100MHz

Display:

LCD: 6.096cm QVGA (2.4") (320x240 pixel); 16M colors

Camera:

Camera: 2.0 Megapixel, 20x digital zoom

Second Camera: CIF with digital zoom

Operating System:

Series 60

Connections:

Wireless: Bluetooth, GPS

RM-179, RM-223: WLAN

Connector: Micro USB Connector; AV Connector

Memory:

RM-223, RM-256 only: MicroSD™ (max 32GB)

Transceiver with BP-6MT Li-Ion battery pack

Talk time	Standby	Note
up to 4h	up to 10days	Depends on network parameters and phone settings

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1. CHANGE HISTORY

Status	Version No.	Date	Comments
Draft	0.1	07.Sep.2007	Initial draft
Approved	1.0	24.Sept.2007	Approval
Approved	2.0	01.Oct.2007	Changes of the assembly procedure implemented.
Approved	3.0	15.Oct.2007	screw order has changed (pic 17)
Approved	4.0	08.Nov.2007	Changes of the disassembly procedure implemented.
Approved	5.0	16.Jan.2008	Disassembly/Assembly procedure has been modified/Exploded view updated

The purpose of this document is to help NOKIA service levels 1 and 2 workshop technicians to carry out service to NOKIA products. This Service Manual is to be used only by authorized NOKIA service suppliers, and the content of it is confidential. Please note that NOKIA provides also other guidance documents (e.g. Service Bulletins) for service suppliers, follow these regularly and comply with the given instructions.

While every endeavor has been made to ensure the accuracy of this document, some errors may exist.
If you find any errors or if you have further suggestions, please notify NOKIA using the address below:

CMO Operation & Logistics
Training and Vendor Development
Multimedia Creation & Support
mailto:Service.Manual@nokia.com

Please keep in mind also that this documentation is continuously being updated and modified, so watch always out for the newest version.

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3. WARNINGS AND CAUTIONS

Warnings and Cautions

Please refer to the phone's user guide for instructions relating to operation, care and maintenance including important safety information. Note also the following:

Warnings:

1. CARE MUST BE TAKEN ON INSTALLATION IN VEHICLES FITTED WITH ELECTRONIC ENGINE MANAGEMENT SYSTEMS AND ANTI–SKID BRAKING SYSTEMS. UNDER CERTAIN FAULT CONDITIONS, EMITTED RF ENERGY CAN AFFECT THEIR OPERATION. IF NECESSARY, CONSULT THE VEHICLE DEALER/MANUFACTURER TO DETERMINE THE IMMUNITY OF VEHICLE ELECTRONIC SYSTEMS TO RF ENERGY.
2. THE HANDPORTABLE TELEPHONE MUST NOT BE OPERATED IN AREAS LIKELY TO CONTAIN POTENTIALLY EXPLOSIVE ATMOSPHERES, EG PETROL STATIONS (SERVICE STATIONS), BLASTING AREAS ETC.
3. OPERATION OF ANY RADIO TRANSMITTING EQUIPMENT, INCLUDING CELLULAR TELEPHONES, MAY INTERFERE WITH THE FUNCTIONALITY OF INADEQUATELY PROTECTED MEDICAL DEVICES. CONSULT A PHYSICIAN OR THE MANUFACTURER OF THE MEDICAL DEVICE IF YOU HAVE ANY QUESTIONS. OTHER ELECTRONIC EQUIPMENT MAY ALSO BE SUBJECT TO INTERFERENCE.

Cautions:

1. Servicing and alignment must be undertaken by qualified personnel only.
2. Ensure all work is carried out at an anti–static workstation and that an anti–static wrist strap is worn.
3. Use only approved components as specified in the parts list.
4. Ensure all components, modules screws and insulators are correctly re–fitted after servicing and alignment.
5. Ensure all cables and wires are repositioned correctly.

4. ESD PROTECTION

Nokia requires that service points have sufficient ESD protection (against static electricity) when servicing the phone.
Any product of which the covers are removed must be handled with ESD protection. The SIM card can be replaced without ESD protection if the product is otherwise ready for use.
To replace the covers ESD protection must be applied.
All electronic parts of the product are susceptible to ESD. Resistors, too, can be damaged by static electricity discharge.
All ESD sensitive parts must be packed in metallized protective bags during shipping and handling outside any ESD Protected Area (EPA).
Every repair action involving opening the product or handling the product components must be done under ESD protection.
ESD protected spare part packages MUST NOT be opened/closed out of an ESD Protected Area.
For more information and local requirements about ESD protection and ESD Protected Area, contact your local Nokia After Market Services representative.

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5. CARE AND MAINTENANCE

This product is of superior design and craftsmanship and should be treated with care. The suggestions below will help you to fulfil any warranty obligations and to enjoy this product for many years.
• Keep the phone and all its parts and accessories out of the reach of small children.
• Keep the phone dry. Precipitation, humidity and all types of liquids or moisture can contain minerals that will corrode electronic circuits.
• Do not use or store the phone in dusty, dirty areas. Its moving parts can be damaged.
• Do not store the phone in hot areas. High temperatures can shorten the life of electronic devices, damage batteries, and warp or melt certain plastics.
• Do not store the phone in cold areas. When it warms up (to its normal temperature), moisture can form inside, which may damage electronic circuit boards.
• Do not drop, knock or shake the phone. Rough handling can break internal circuit boards.
• Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the phone.
• Do not paint the phone. Paint can clog the moving parts and prevent proper operation.
• Use only the supplied or an approved replacement antenna. Unauthorised antennas, modifications or attachments could damage the phone and may violate regulations governing radio devices.
All of the above suggestions apply equally to the product, battery, charger or any accessory.

6. BATTERY INFORMATION

Note: A new battery's full performance is achieved only after two or three complete charge and discharge cycles! The battery can be charged and discharged hundreds of times but it will eventually wear out. When the operating time (talk-time and standby time) is noticeably shorter than normal, it is time to buy a new battery. Use only batteries approved by the phone manufacturer and recharge the battery only with the chargers approved by the manufacturer.
Unplug the charger when not in use. Do not leave the battery connected to a charger for longer than a week, since overcharging may shorten its lifetime.
If left unused a fully charged battery will discharge itself over time Temperature extremes can affect the ability of your battery to charge.
For good operation times with Ni-Cd/NiMh batteries, discharge the battery from time to time by leaving the product switched on until it turns itself off (or by using the battery discharge facility of any approved accessory available for the product).
Do not attempt to discharge the battery by any other means Use the battery only for its intended purpose. Never use any charger or battery which is damaged.
Do not short-circuit the battery. Accidental short-circuiting can occur when a metallic object (coin, clip or pen) causes direct connection of the + and - terminals of the battery (metal strips on the battery) for example when you carry a spare battery in your pocket or purse. Short-circuiting the terminals may damage the battery or the connecting object.
Leaving the battery in hot or cold places, such as in a closed car in summer or winter conditions, will reduce the capacity and lifetime of the battery. Always try to keep the battery between 15°C and 25°C (59°F and 77°F). A phone with a hot or cold battery may temporarily not work, even when the battery is fully charged. Batteries' performance is particularly limited in temperatures well below freezing.
Do not dispose batteries in a fire! Dispose of batteries according to local regulations (e.g. recycling). Do not dispose as household waste.

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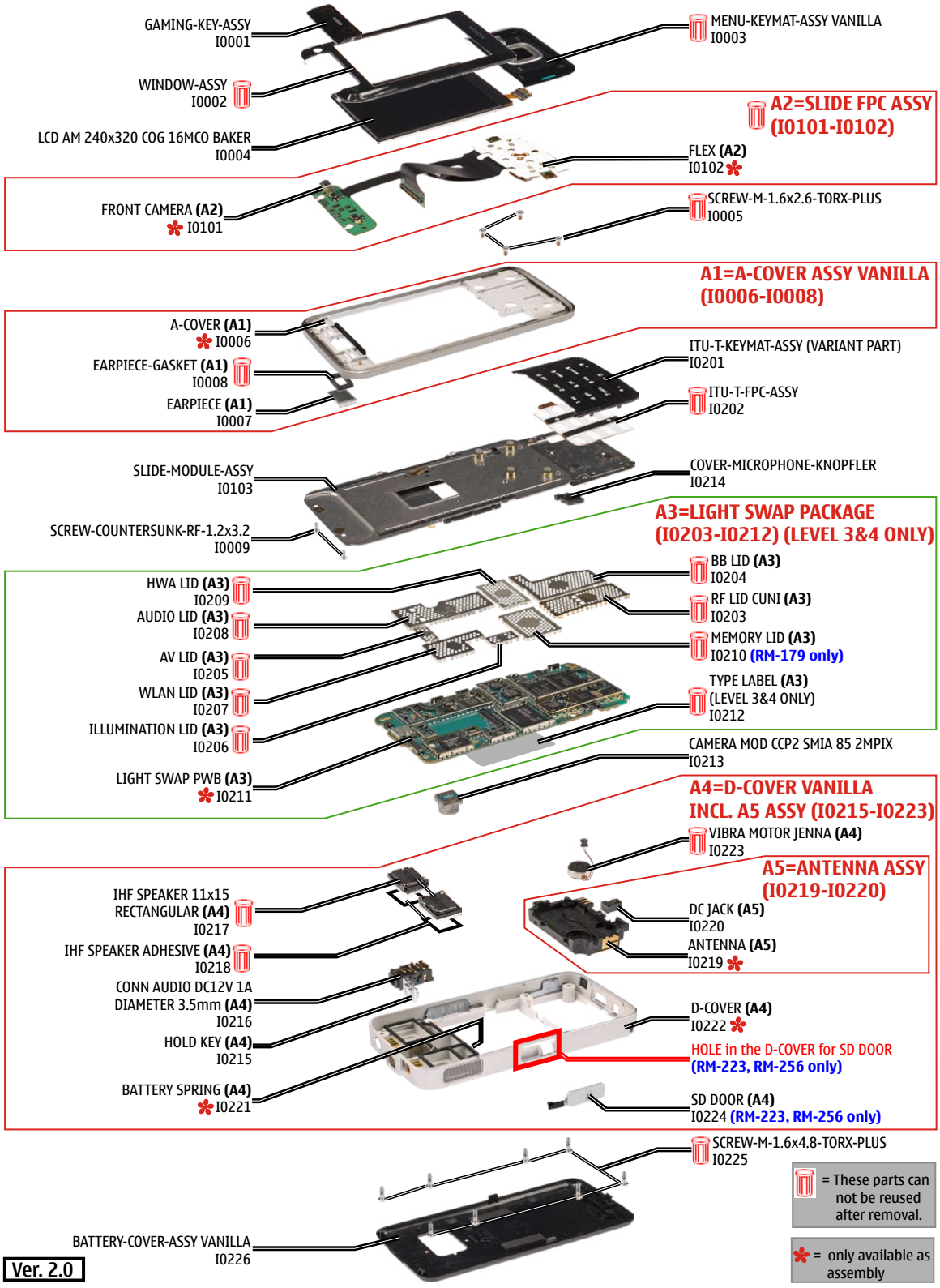
7. EXPLODED VIEW

See corresponding ITEM/CIRCUIT REF in the Spare Parts Service Bulletins on NOL.

N81 RM-179 / RM-223 / RM-256 EXPLODED VIEW


GAMING-KEY-ASSY I0001
WINDOW-ASSY I0002
LCD AM 240x320 COG 16MCO BAKER I0004
FRONT CAMERA (A2) I0101
MENU-KEYMAT-ASSY VANILLA I0003
A2=SLIDE FPC ASSY (I0101-I0102)
FLEX (A2) I0102
SCREW-M-1.6x2.6-TORX-PLUS I0005
A1=A-COVER ASSY VANILLA (I0006-I0008)
A-COVER (A1) I0006
EARPIECE-GASKET (A1) I0008
EARPIECE (A1) I0007
ITU-T-KEYMAT-ASSY (VARIANT PART) I0201
ITU-T-FPC-ASSY I0202
SLIDE-MODULE-ASSY I0103
SCREW-COUNTERSUNK-RF-1.2x3.2 I0009
COVER-MICROPHONE-KNOPFLER I0214
A3=LIGHT SWAP PACKAGE (I0203-I0212) (LEVEL 3&4 ONLY)
HWA LID (A3) I0209
AUDIO LID (A3) I0208
AV LID (A3) I0205
WLAN LID (A3) I0207
ILLUMINATION LID (A3) I0206
LIGHT SWAP PWB (A3) I0211
BB LID (A3) I0204
RF LID CUNI (A3) I0203
MEMORY LID (A3) I0210 (RM-179 only)
TYPE LABEL (A3) (LEVEL 3&4 ONLY) I0212
CAMERA MOD CCP2 SMIA 85 2MPIX I0213
A4=D-COVER VANILLA INCL. A5 ASSY (I0215-I0223)
VIBRA MOTOR JENNA (A4) I0223
A5=ANTENNA ASSY (I0219-I0220)
DC JACK (A5) I0220
ANTENNA (A5) I0219
IHF SPEAKER 11x15 RECTANGULAR (A4) I0217
IHF SPEAKER ADHESIVE (A4) I0218
CONN AUDIO DC12V 1A DIAMETER 3.5mm (A4) I0216
HOLD KEY (A4) I0215
BATTERY SPRING (A4) I0221
D-COVER (A4) I0222
HOLE in the D-COVER for SD DOOR (RM-223, RM-256 only)
SD DOOR (A4) I0224 (RM-223, RM-256 only)
SCREW-M-1.6x4.8-TORX-PLUS I0225
BATTERY-COVER-ASSY VANILLA I0226
= These parts can not be reused after removal.
= only available as assembly
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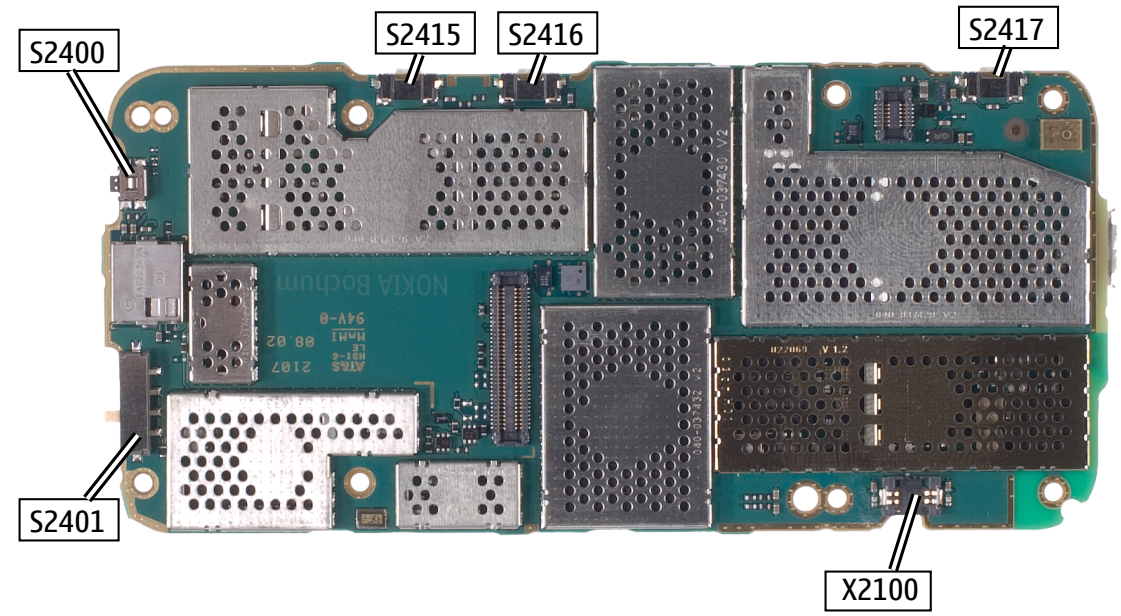
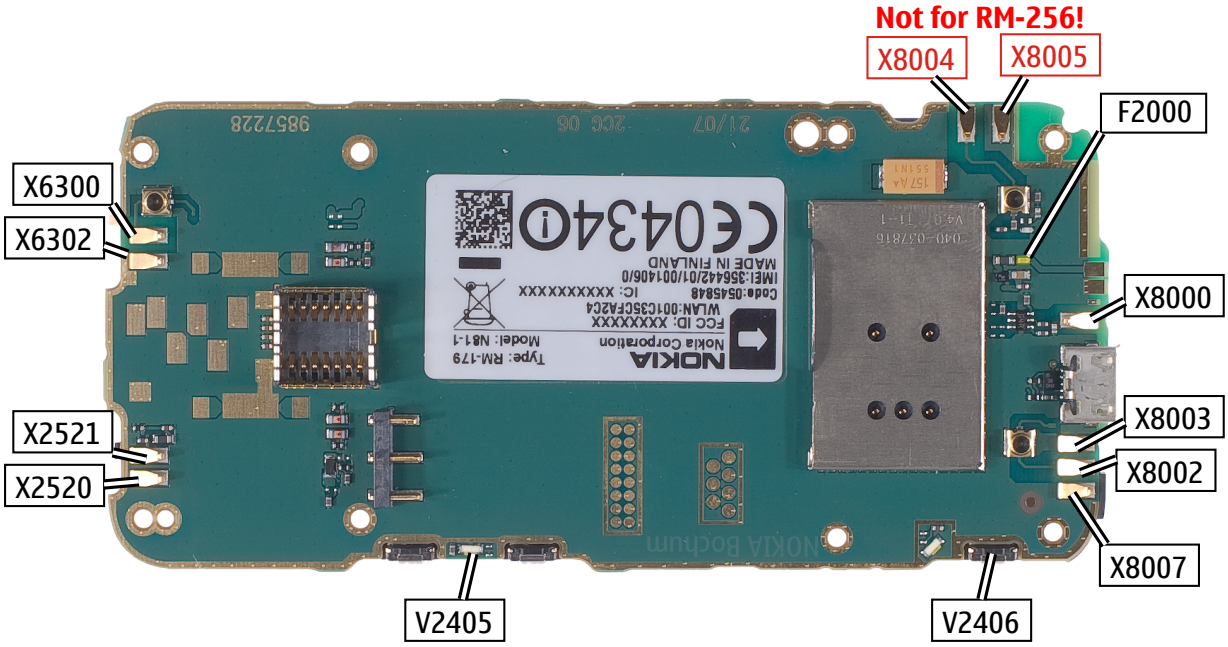
8. LEVEL 2 SOLDER COMPONENTS

N81 RM-179/RM-223/RM-256 Components overview

Solder components only for LEVEL 2



Not for RM-256!



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9. SERVICE DEVICES

FLS-5 incl. ACF-8, Driver and User Guide Dongle and flash device incorporated into one package, developed specifically for POS use.	**ACF-8** Universal Power Supply is used to power FLS-5.	**Travel Charger AC-4** Small and lightweight charger for fast charging of your phone battery.
CA-101 Service Cable to connect the PC with the Micro USB connector.	**SS-88** Camera removal tool. One side is for disassembly, the other side for assembly.	**RJ-130** Soldering Jig
Internal Battery BP-6MT Inserted under the back cover, this Li-Ion battery provides power in a lightweight package.		**0772040** **NMP Standard Toolkit (V2)** For more informations refer to the Service Bulletin (SB-011) on NOKIA Online. Supplier or manufacturer contacts for tool re-order can be found in "**Recommended service equipment**" document on NOKIA Online.

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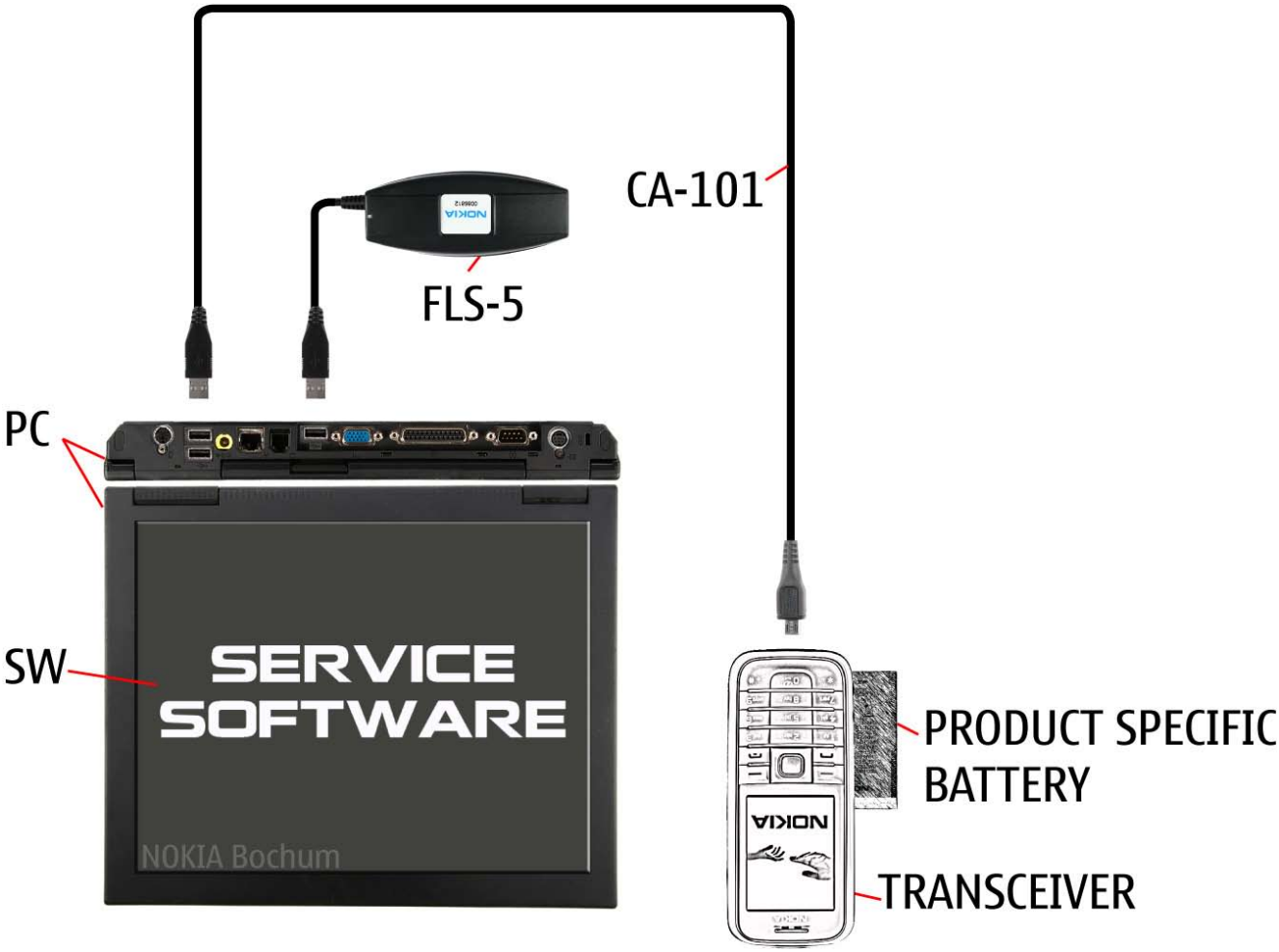
10. SW-UPDATE

Flash Concept – (Point of Sales)

To use FLS-5 Flash Dongle you have to follow the user guide inside the sales package. Please check always for the latest version of flash software, which is available on
NOKIA Online.



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11. DISASSEMBLY INSTRUCTION

1. Nokia N81 disassembly.

2. You will need the Nokia Standard Toolkit version 2 as well as the camera removal tool SS-88. Also refer to the General Mechanical Guideline Video for additional hints about the tools and component handling.

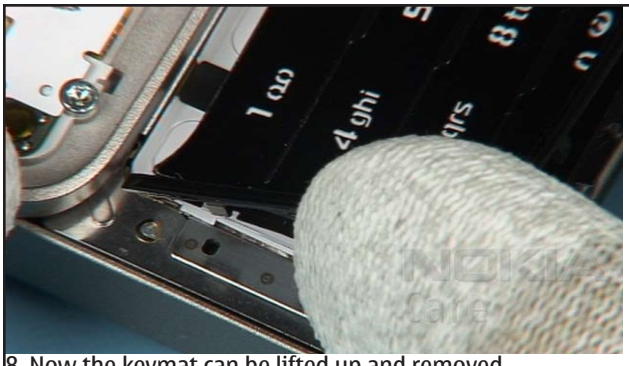
3. The MENU KEYMAT is fixed with 6 plastic hooks, located as shown.

4. Insert the SRT-6, gently pry open all hooks. Do not shift the tool.

5. If all clips are released, the MENU KEYMAT can be removed easily. Discard this Keymat, do not use it again.

6. Gently pry open all clips of the ITU-T-KEYMAT with the SRT-6...

7. ... continue until all clips of the keymat are unlocked.
Note: These clips are very delicate and can be damaged easily.



8. Now the keymat can be lifted up and removed.

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9. Unscrew these 2 Torx plus size 6 screws.

10. Remove these screws and discard them. Do not use them again.

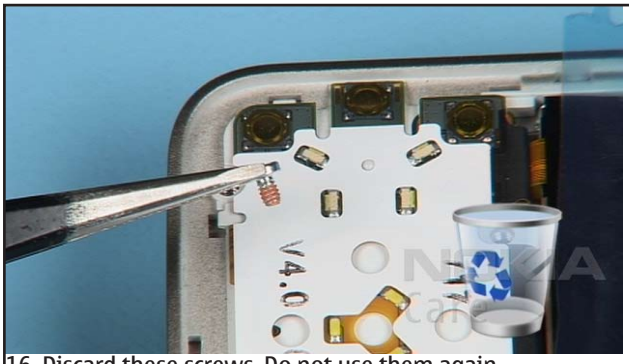
11. Release the adhesive of the WINDOW-ASSY with the SRT-6...

12. ...on both sides.

13. Now the WINDOW-ASSY can be removed. Do not use it again.

14. Lever out the GAMING KEY ASSY.

15. Unscrew the next 2 Torx size 6 screws in the shown order.


16. Discard these screws. Do not use them again.

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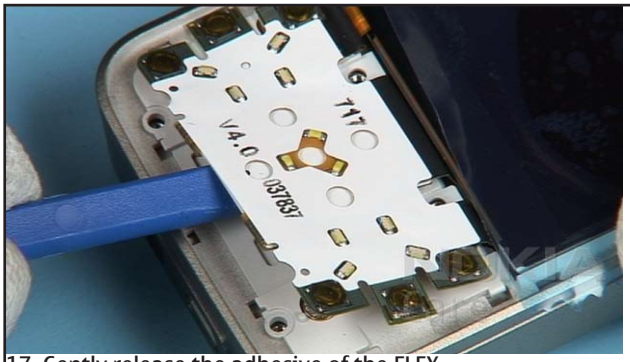
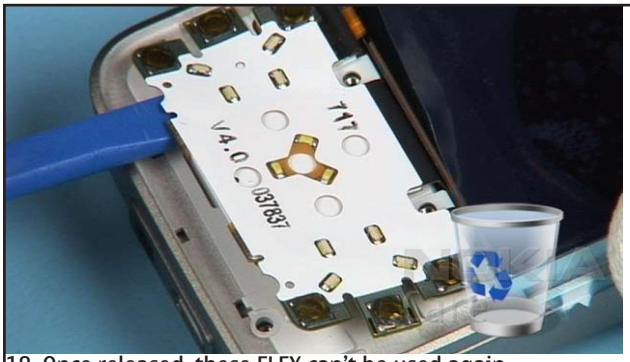
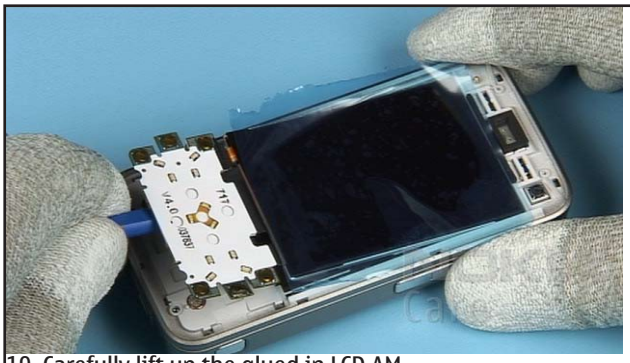
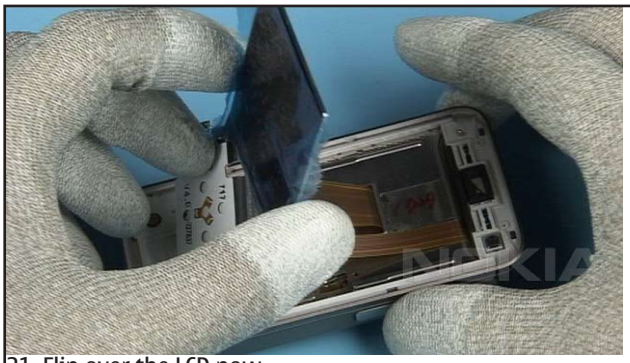
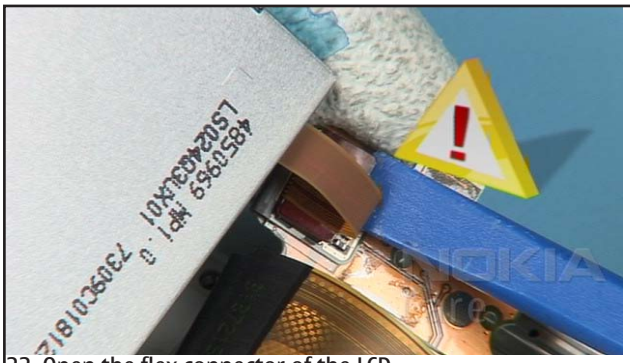

17. Gently release the adhesive of the FLEX.


18. Once released, these FLEX can't be used again.

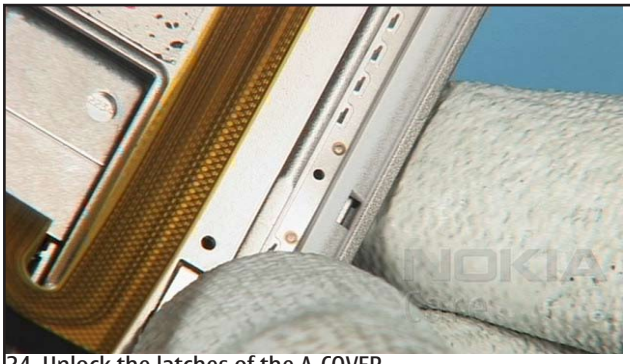

19. Carefully lift up the glued in LCD AM.

20. Note the correct positioning of the SS-93. Do not destroy the components underneath.


21. Flip over the LCD now.


22. Open the flex connector of the LCD.

23. Release both countersunk screws in the order shown.


24. Unlock the latches of the A-COVER...

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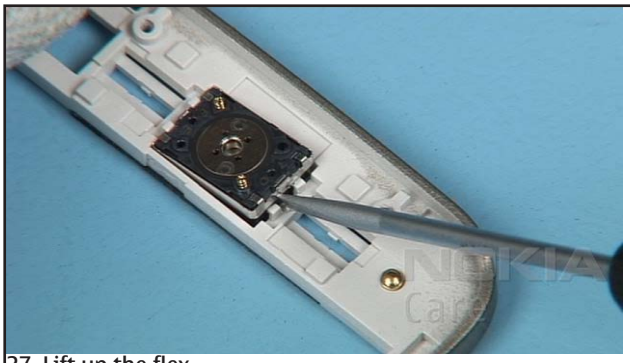
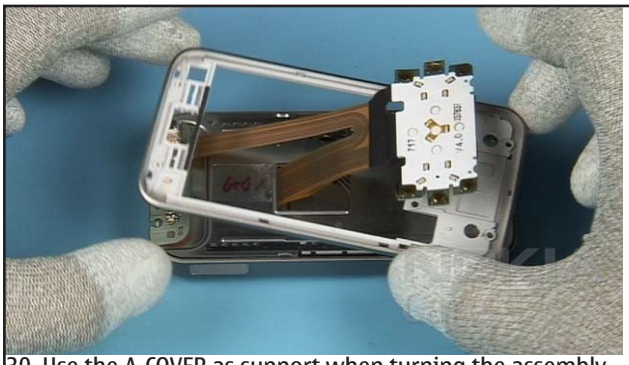
25. ...on both sides.

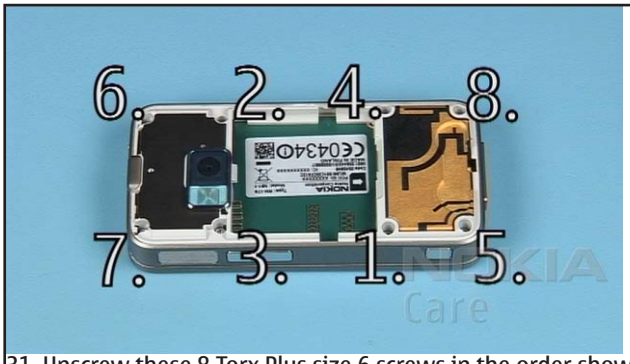
26. Remove the A-COVER.


27. Lift up the flex.

28. Gently lever out the EARPIECE. Prevent destroying the delicate clips of the A.-COVER.

29. Do not destroy the grounding pads.


30. Use the A-COVER as support when turning the assembly.



31. Unscrew these 8 Torx Plus size 6 screws in the order shown.

32. Discard these screws. Do not use them again.

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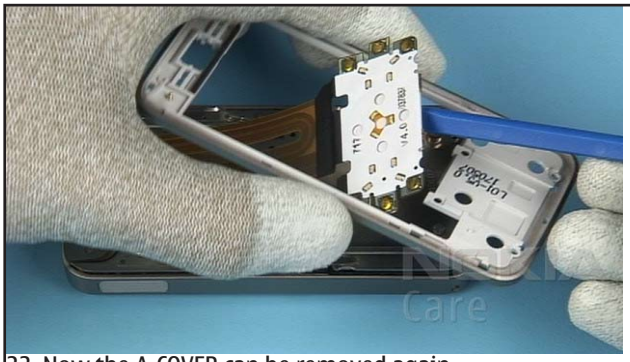
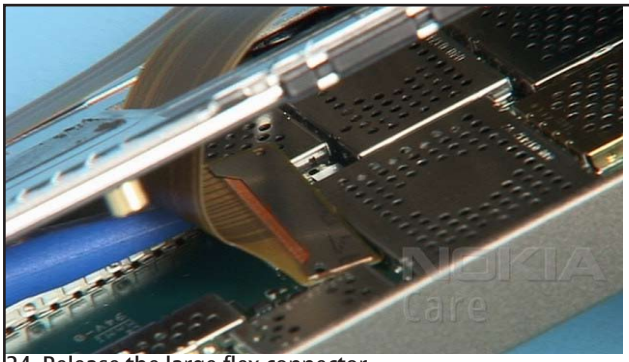
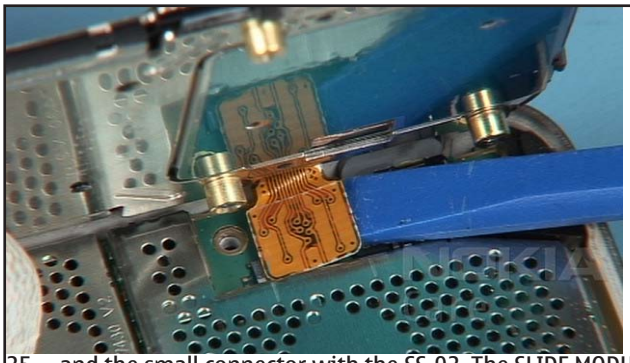
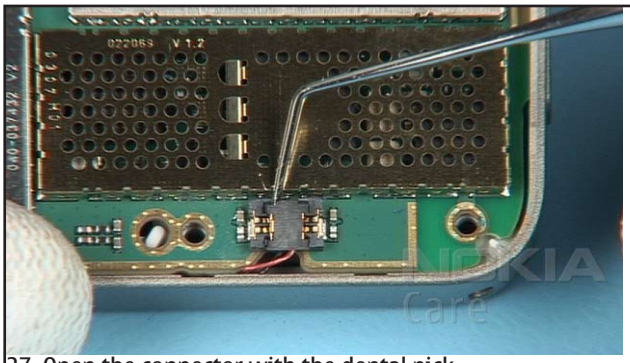

33. Now the A-COVER can be removed again.

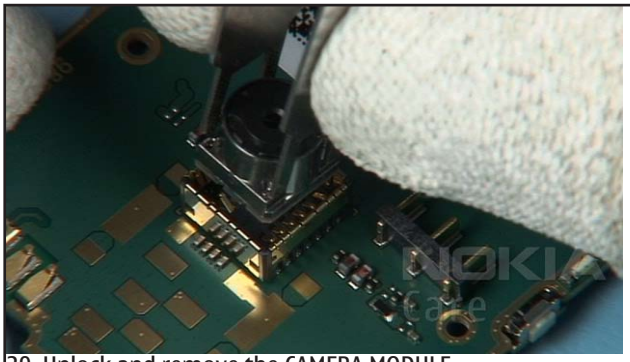

34. Release the large flex connector...


35. ...and the small connector with the SS-93. The SLIDE MODULE ASSY can be removed now.

36. Slot the FLEX trough the recess of the SLIDE MODULE ASSY.


37. Open the connector with the dental pick.

38. Push out the ENGINE MODULE.


39. Unlock and remove the CAMERA MODULE.

40. Push out the ANTENNA ASSY.

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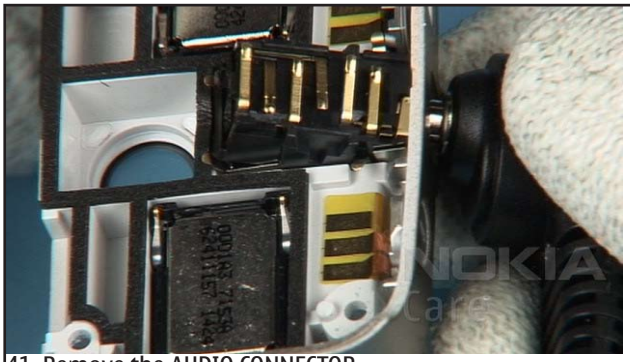
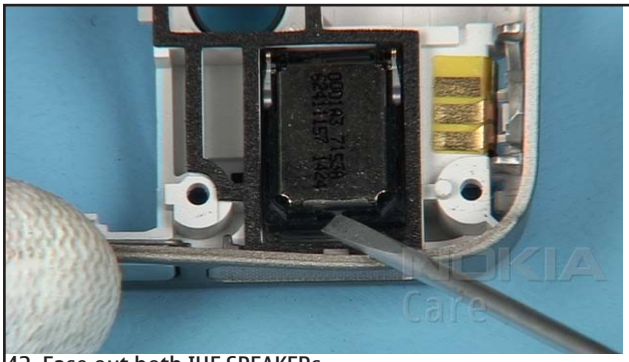

41. Remove the AUDIO CONNECTOR...


42. Ease out both IHF SPEAKERs.

43. Discard these speakers. They can not be used again. The disassembly procedure is now completed.

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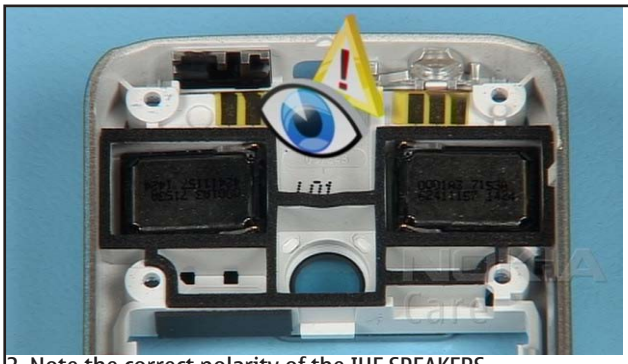
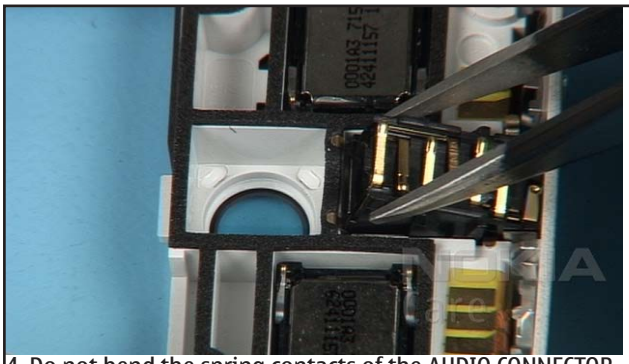
12. ASSEMBLY INSTRUCTION

1. N81 Assembly Hints.

2. You will need the Nokia Standard Toolkit version 2 as well as the camera removal tool SS-88. Also refer to the General Mechanical Guideline Video for additional hints about the tools and component handling.

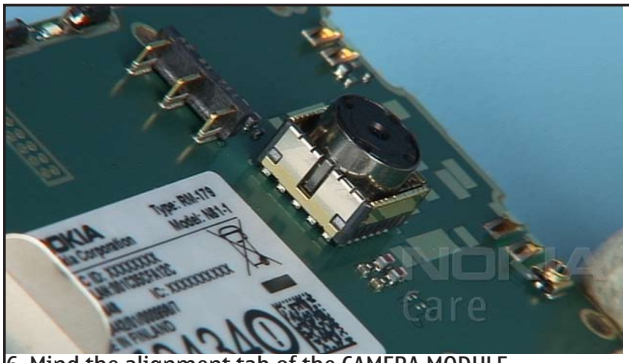


3. Note the correct polarity of the IHF SPEAKERS.



4. Do not bend the spring contacts of the AUDIO CONNECTOR.

5. Check the correct positioning of the ANTENNA ASSY and VIBRA MOTOR before going on.



6. Mind the alignment tab of the CAMERA MODULE.

7. Place the MICROPHONE COVER. Mind the correct positioning

8. Insert the ENGINE MODULE into the cover.

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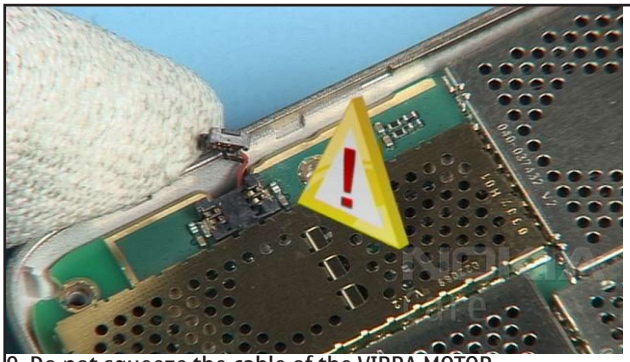
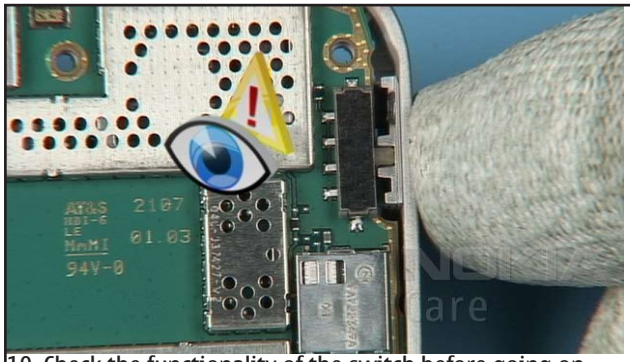
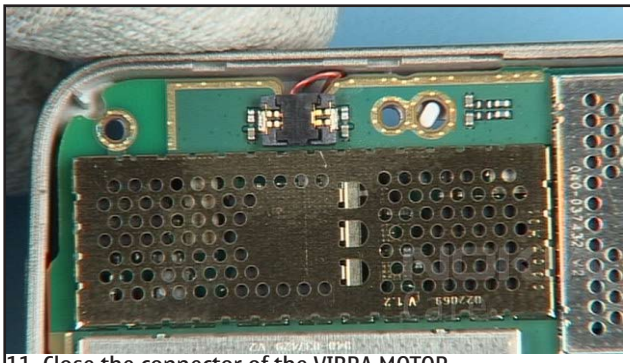
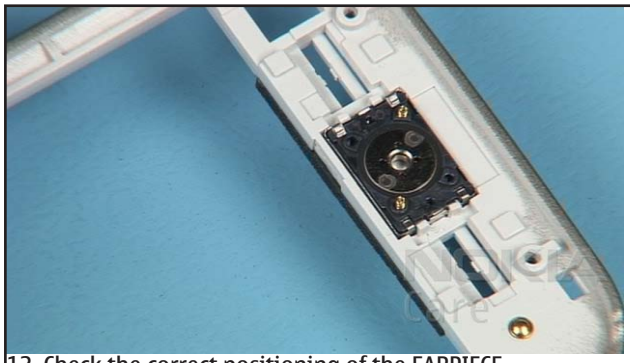
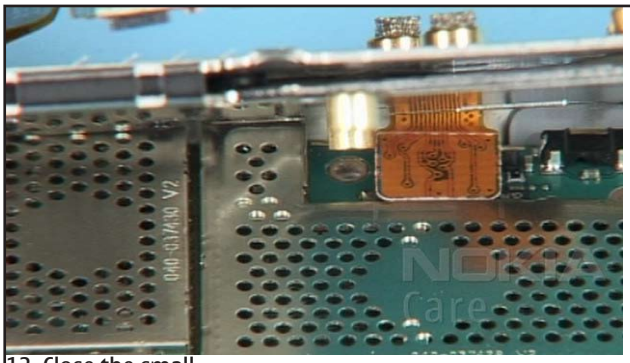
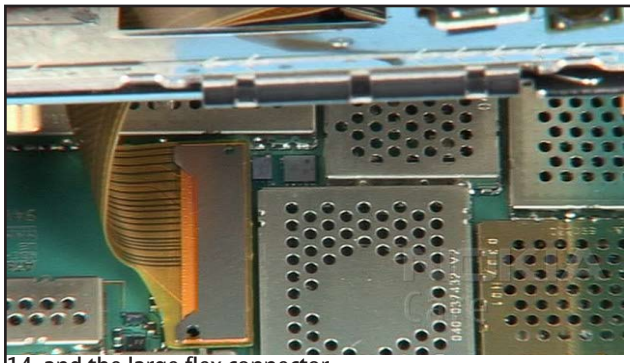

9. Do not squeeze the cable of the VIBRA MOTOR.


10. Check the functionality of the switch before going on.


11. Close the connector of the VIBRA MOTOR.


12. Check the correct positioning of the EARPIECE.


13. Close the small...


14. and the large flex connector.

15. Take these new screws...

16. Set the correct torque.

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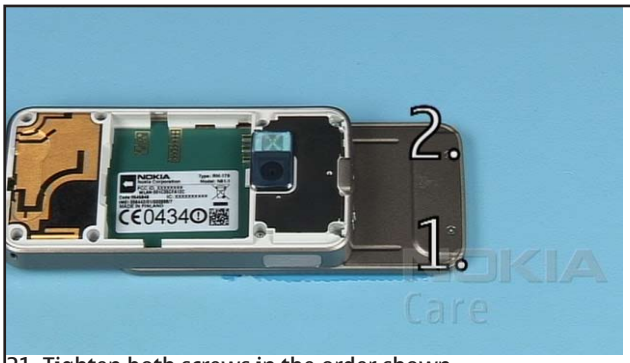
17. Tighten the screws in the order shown.

18. Place the LCD correctly.

19. Insert these counter sunk screws.

20. Set the correct torque.



21. Tighten both screws in the order shown.

22. Take these new screws...

23. Set the correct torque.

24. Tighten the screws in the order shown.

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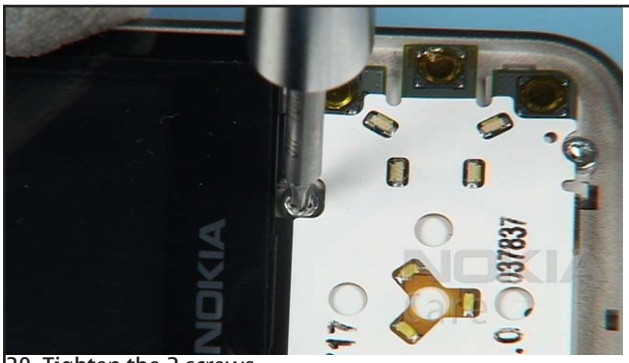
25. Remove the protective film from the WINDOW.

26. Insert the WINDOW, beginning from the top.

27. Push down the WINDOW, at least 5 seconds each 2 cm, beginning from the top in order to activate the adhesive coating.

28. Use these 2 new screws.

29. Set the correct torque.


30. Tighten the 2 screws.

31. Insert the MENU KEYMAT.

32. Click all snaps into their places.

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33. Now insert the ITU-T-KEYMAT.

34. Slightly click all the snaps into their places.

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